



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Motoshige HIBINO et al.
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For: HOSE OF IMPERMEABILITY AND A PROCESS FOR
MANUFACTURING THE SAME

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PRELIMINARY AMENDMENT

Commissioner for Patents
P. O. Box 1450
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Sir:

Kindly amend the claims as follows:

1. (Amended) A hose as set forth in claim 23, having a wall with a longitudinally continuous unitary corrugated surface ~~corrugated~~ along at least a part of its length, and comprising an inner resin layer, a laminated layer having a metal film held between two resin films and surrounding the inner resin layer, and an outer ~~thin~~ resin layer surrounding the laminated layer.

2. (Amended) A hose as set forth in claim 21, wherein the laminated layer is a spirally wound or longitudinally lapped layer of a laminated tape having the metal film bonded to the resin films.

3. (Original) A hose as set forth in claim 2, wherein at least the inner resin layer and the laminated layer, overlapping edge portions of the laminated tape, or the laminated layer and the

outer resin layer are bonded with an adhesive.

4. (Original) A hose as set forth in claim 2, wherein the laminated tape has a thickness of 200 μm at maximum.

5. (Original) A hose as set forth in claim 2, wherein the metal film is of aluminum and has a thickness of from 7 to less than 200 μm .

6. (Amended) A process for manufacturing a hose of impermeability as set forth in claim 21, and comprising the steps of:

extruding an inner resin layer about a mandrel;

applying a laminated tape having a metal film held between two resin films to an outer surface of the inner resin layer to form a laminated layer; and

forming an outer resin layer about the laminated layer by extrusion or electrostatic powder coating to complete a multi-layered wall, and corrugating the wall along at least a part of its length, or

corrugating a hose structure composed of the inner resin layer and the laminated layer along at least a part of its length, and forming an outer resin layer by electrostatic powder coating about the laminated layer to complete a multi-layered wall.

7. (Amended) A hose having a wall with a longitudinally continuous unitary corrugated surface along at least a part of its length, and comprising an inner ~~thin~~ resin layer, a ~~thin~~ metal

layer surrounding the inner resin layer, and an outer ~~thin~~ resin layer surrounding the metal layer, wherein each of the inner resin layer and the outer resin layer has a thickness not exceeding 5mm.

8. (Original) A hose as set forth in claim 7, wherein the metal layer is a spirally wound or longitudinally lapped layer formed by an aluminum film having a thickness of from 7 to less than 200 μm .

9. (Original) A hose as set forth in claim 8, wherein at least the inner resin layer and the metal layer, overlapping edge portions of the metal layer, or the metal layer and the outer resin layer are bonded with an adhesive.

10. (Cancelled).

11. (Amended) A process for manufacturing a hose of impermeability comprising the steps of:

extruding an inner resin layer about a mandrel;

applying a metal film onto an outer surface of the inner resin layer to form a metal layer thereabout;

forming an outer resin layer on an outer surface of the metal layer by extrusion or electrostatic powder coating to complete a multi-layered wall;

each of the inner resin layer and the outer resin layer having a thickness not exceeding 5mm; and

corrugating the wall along at least a part of its length.

12. (Amended) A process for manufacturing a hose of impermeability comprising the steps of:

applying a laminated tape composed of metal and resin films about a mandrel to form a tubular laminated layer; and

after removing the mandrel, coating an inner surface of the laminated layer with a resin powder electrostatically to form an ~~a thin~~ inner resin layer having a thickness not exceeding 5mm.

13. (Original) A process as set forth in claim 12, further comprising the step of forming a protective layer surrounding the laminated layer before or after the coating step.

14. (Original) A process as set forth in claim 12, wherein a tubular part for a hose assembly is connected to the laminated layer before the coating step, so that the tubular part may also have an inner surface coated with the resin powder.

15. (Original) A process as set forth in claim 12, wherein the laminated tape is spirally wound or longitudinally lapped about the mandrel.

16. (Original) A process as set forth in claim 12, wherein the laminated tape comprises a metal film and two resin films between which the metal film is held.

17. (Original) A process as set forth in claim 12, wherein the laminated tape has a thickness of 30 to 200 μm and includes a metal film having a thickness of 7 to 50 μm .

18. (Original) A process as set forth in claim 12, wherein the resin powder is of a thermoplastic resin and is melted under heat on the inner surface, the coating and melting being performed at least once.

19. (Original) A process as set forth in claim 12, wherein the resin powder is selected from the group consisting of polyamide, ethylene-vinyl alcohol copolymer, polyester, modified polyolefin, and fluoro resins.

20. (Original) A process as set forth in claim 19, wherein the modified polyolefin resin is a silane-crosslinked, acid-modified or hydroxyl-modified polyethylene resin, and the fluororesin is a chlorotrifluoroethylene-vinylidene fluoride copolymer, THV or PVDF.

21. (New) A hose as set forth in claim 1, wherein each of the inner resin layer and the outer resin layer has a thickness not exceeding 5mm.

22. (New) A hose as set forth in claim 7, wherein the inner resin layer has a thickness of from 40 μ m to 5mm and the outer resin layer has a thickness of from 50 μ m to 5mm.

23. (New) A hose having a wall corrugated along at least a part of its length, comprising an inner resin layer, a laminated layer having a metal film held between two resin films and surrounding the inner resin layer, and an outer resin layer surrounding the laminated layer.